

Big data centers, big problems

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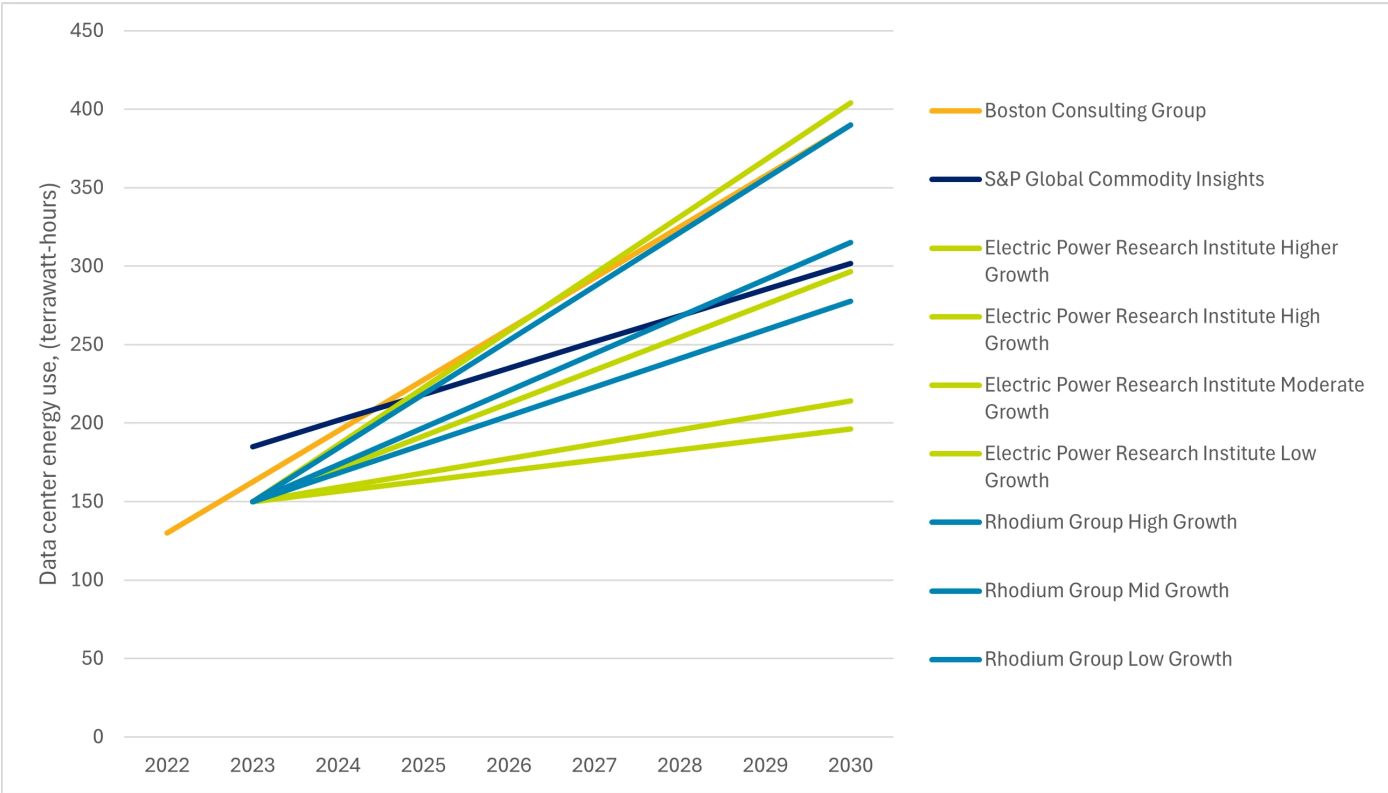
Energy use at United States data centers – including for highly energy-intensive computing activities such as artificial intelligence (AI) and cryptocurrency mining – is [projected to be a major source of increased electricity demand](#) over the next 10 years (second only to the electrification of transportation). Expectations of increasing electricity demand have resulted in delaying the retirements of fossil fuel power plants and proposals to resurrect some retired fossil fuel and nuclear power plants, slowing America’s progress toward a clean energy system with less impact on the climate.

A dramatic surge in electricity demand from U.S. data centers is not inevitable. Policymakers must improve the efficiency and transparency of data centers, and ensure that data centers are powered by clean energy.

Energy use for computing is increasing dramatically, but projections of future demand are highly uncertain and depend on policy.

Forecasts of future electricity demand from data centers project significant growth through 2030 and beyond, but vary widely and are highly uncertain. [One report by the Electric Power Research Institute \(EPRI\)](#), for example, predicts data center electricity demand could grow by as little as 29% or as much as 166% from 2023 levels by 2030.

Comparison of industry forecasts for data center electricity demand



Staff | TPIN

Rising computing demand is already delaying America’s transition to clean energy.

High demand for electricity from U.S. data centers is delaying the planned closures of fossil fuel power plants. At least 17 fossil fuel generating units at seven power plants totaling 9,100 megawatts (MW) of capacity have been delayed or are at risk of being delayed due to concerns about rising electricity demand, with data centers named as a key concern in many cases. Utilities are also emphasizing concerns about computing energy demand to propose investments in new fossil fuel power plants. At least 10,868 MW of new fossil-fuel generation is being planned to meet projected demand, including, in many cases, from data centers.

Much of the increased demand for energy from data centers is attributable to new energy-intensive computing practices such as artificial intelligence (AI) and cryptocurrency mining. Some of this demand may be unnecessary. Bitcoin, one of the most popular cryptocurrencies, is mined by using computing power to solve cryptographic puzzles. Globally, [Bitcoin consumed](#) 121.13 Terawatt hours (TWh) of electricity in 2023, which is [more than the entire state of Michigan](#) produced that year.

Data centers have other negative impacts on communities.

Not only are data centers energy hogs, but they also consume millions of gallons of water, create noise pollution and could increase prices for utility customers.

Data centers consume millions of gallons of water every day both on-site for cooling and off-site for electricity generation. Just one data center can [consume as much as 5 million gallons](#) of water daily.

Residents living near cryptocurrency mines [have reported noise as high as 91 decibels](#), which is [nearly as loud as a chainsaw](#). Exposure to noise can cause health problems. For example, ever since a loud cryptocurrency mine was built near residents in Granbury, Texas, citizens have reported a variety of ailments -- from hearing loss and migraines to vertigo and nausea.

The cost of investments in new generating capacity could be passed off to taxpayers and utility customers, especially if demand for electricity is overestimated. Concerns among regulators and utility customers are well-founded: Data centers have been cited as a root cause of [an expected 20% increase in utility prices](#) in 2025 in the Mid-Atlantic region.

Smart policy can prevent further delays in the transition to clean energy.

Rising electricity demand from computing is not inevitable. Requiring data centers to be more efficient, powering data centers with renewable energy, and avoiding unnecessary, damaging or wasteful forms of computing can reduce the impacts.

- Governments should require data centers to power operations with virtually all renewable energy. Investments in new fossil fuel power plants may delay the transition to clean, renewable energy; nuclear power also poses unacceptable risks to the public and the environment.
- Public utility commissions should insist that utilities take steps to reduce the impacts of data center energy use such as implementing demand-response programs and directing utilities to avoid investments in new fossil fuel infrastructure to meet new demand.
- Local and state governments should require data centers to report on energy and water use and meet comprehensive energy efficiency standards. Additional transparency measures will help communities understand when permits are applied for and approved, who is leasing the land and what their plans are.
- Public utility commissions should enact ratpayer protections such as requiring long-term service agreements for data centers, charging exit fees for reduced or terminated service, and requiring data centers to pay for the full cost of service.
- Decision-makers should accelerate clean renewable energy production and reduce interconnection queues.
- Policymakers should consider limits on computing activities that are unnecessarily damaging or wasteful. States should consider moratoria or limits on particularly energy-intensive practices such as “proof of work” crypto mining, which uses huge amounts of energy to solve cryptographic puzzles and verify crypto transactions.

Authors

Quentin Good is a policy analyst with Frontier Group. He has a B.A. in Economics from Metropolitan State University of Denver and an M.A. in International Finance, Trade, and Economic Integration from the University of Denver. He served with the U.S. Peace Corps for three years in Senegal, West Africa, as a community economic development volunteer and sector leader. Quentin lives and works in Denver.

Johanna directs strategy and staff for Environment America’s energy campaigns at the local, state and national level. In her prior positions, she led the campaign to ban smoking in all Maryland workplaces, helped stop the construction of a new nuclear reactor on the shores of the Chesapeake Bay and helped build the support necessary to pass the EmPOWER Maryland Act, which set a goal of reducing the state’s per capita electricity use by 15 percent. She also currently serves on the board of Community Action Works. Johanna lives in Amherst, Massachusetts, with her family, where she enjoys growing dahlias, biking and the occasional game of goaltimate.

Abe Scarr is the director of Illinois PIRG and is the PIRG Energy and Utilities Program Director. He is a lead advocate in the Illinois Capitol and in the media for stronger consumer protections, utility accountability, and good government. In 2017, Abe led a coalition to pass legislation to implement automatic voter registration in Illinois, winning unanimous support in the Illinois General Assembly for the bill. He has co-authored multiple in-depth reports on Illinois utility policy and leads coalition campaigns to reform the Peoples Gas pipe replacement program. As PIRG’s Energy and Utilities Program Director, Abe supports PIRG energy and utility campaigns across the country. He also serves as a board member for the Consumer Federation of America. Abe lives in Chicago, where he enjoys biking, cooking and tending his garden.

R.J. is focused on the intersection of tech and people. Her work as a writer and researcher ranges from the risks of commercialization of personal data, to consumer harms like scams and data breaches, to emerging threats from AI. In her work as a Policy Analyst at Frontier Group, she has authored research reports on government transparency, consumer debt and predatory auto lending, and has testified before Congress. Her work has been featured on The Today Show, CBS Mornings, The New York Times, WIRED magazine, and USA Today, among many other outlets. When she’s not protecting the public interest, she is an avid reader, fiction writer and hiker. Though she lives in Boston, she will always consider herself a Kansan at heart.